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ABSTRACT

This simulation activity introduces the concepts of cooperation and competition and exploring positive models for problem solving. The activity can be used with elementary and secondary school participants, as well as with adults. Suggestions for adapting discussion for younger participants are provided. The group task is to form five equal-sized squares by combining pieces without speaking or signaling to another team member or by taking from another team member. Giving and sharing are allowed. Variations for the use of the simulation are given. The volume contains the following sections: (1) "Introduction"; (2) "Using Simulations"; (3) "Overview of the Activity"; (4) "Running the Simulation"; (5) "Debriefing the Simulation"; and (6) "Participant Handout." (EH)

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ED 388 579

BROKEN SQUARES

A SIMULATION OF GROUP COOPERATION

SO 025 477

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BROKEN SQUARES

A SIMULATION EXPLORING COOPERATION AND CONFLICT

Adapted by

the Stanford Program on International and Cross-Cultural Education (SPICE)

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INTRODUCTION

Introduction

Broken Squares provides an excellent opportunity for introducing the concepts of cooperation and competition and exploring positive models for problem solving. In this activity, participants are confronted with a group task and provided with guidelines for accomplishing the task. Through their own experiences at solving the group "problem," participants will increase their awareness of how individual attitudes and behavior affect group achievement. Participants may also gain a better understanding of the way in which their own attitudes and behavior affect group interactions both in and out of the classroom. Following the activity, participants will engage in a general discussion of the role cooperation and/or competition played in the simulation and then apply their experiences to real life situations.

During the debriefing session, participants will first air their feelings concerning the events that occurred during the activity. A series of questions will allow participants to consider how the cooperative ideal explored in the simulation applies to society in general. You may wish to extend the discussion further to a particular topic under study in your class. This simulation is a proven tool for teaching about international interdependence and the need for cooperation. It is also an effective activity for opening up a discussion of interpersonal or intergroup issues.

Broken Squares may be used successfully with elementary and secondary school participants, as well as with adults. Suggestions for adapting the discussion for younger participants are provided.

USING SIMULATIONS

A simulation is an important learning activity which involves participants in roles where they must think and act in a situation which is similar to one in real life. Although never able to duplicate the complexity of a real event or teach specific facts, a simulation may allow participants to exercise some of the problem-solving skills and experience some of the feelings which occur in a real event. A simulation should never be treated lightly as only a "game". Good simulations have the capacity to generate very strong thoughts and feelings in their participants and the facilitator should always be prepared for that possibility.

Although simulations involve role play, they operate within the constraints of a pre-designed set of rules. A certain degree of ambiguity in these rules leaves room for participants to bring their prior experience and personal values to the activity, but the general framework is defined.

Careful thought should be given to the placement of a simulation in a unit of instruction. How does it help achieve the goals of the unit? Which concepts and skills will this experience help develop? Is there prior information needed which will enhance participation in the simulation and/or help link the experience to real-life situations? Will the simulation set a context for material to be studied in the future? How can the simulation be structured to allow adequate time for orientation, play, debriefing, and follow-up? Is the complexity of the simulation appropriate for the age and experience of the participants? Is the available physical space adequate?

The role of the teacher in a simulation is absolutely critical. The teacher serves as an orientation leader and a facilitator. It is important to experience the simulation yourself before introducing it to your participants. Invite your friends or colleagues to participate with you. If the simulation requires more than one facilitator (as recommended in *Broken Squares*), be sure all facilitators have the opportunity to participate in the activity before-hand. When more than one facilitator is involved, the responsibilities of each should be clearly defined when planning for the simulation.

A simulation is run most successfully when participants have had a clear, concise introduction to its framework. As rules and roles are explained, time should be allowed for questions and practice. It is important, however, that the focus remain on the framework of the activity. The facilitator should avoid comments or answers that suggest strategies or infer outcomes.

During the simulation, the facilitator should carefully observe the proceedings and take notes which may help guide the debriefing. It is important to remember that the participants will sometimes select strategies that don't work and communications may sometimes become tense and difficult. Unless the participants' safety is jeopardized, the facilitator should not coach or intervene in the interaction, allowing participants the opportunity to solve problems directly.

Debriefing a simulation is essential. Unless there is adequate time for debriefing, a simulation should not be attempted. Missing or inadequate debriefing may leave a residue of misunderstandings and/or misinformation which may have negative consequences both in and outside the classroom. Equally important is the lost opportunity for reflection and learning. Debriefing questions are generally provided with the simulation, but they should generally include questions which elicit:

- a description of what happened
- how the participants felt during the simulation and how they are feeling afterward (both as members of groups in which they participated during the game and as individuals)
- strategies that were attempted and their results
- other strategies which might have been possible
- analogies to real life situations and a discussion of how this was the same/different
- how the situation related to the participants' own values and their subsequent actions during the simulation
- questions which remain for future study and ways to pursue those questions

Traditional evaluation methods generally are not appropriate for simulations. Participants should never be evaluated for their participation in the simulation itself. Many teachers have found an effective evaluation activity to be a journal entry or other writing exercise in which participants summarize their insights from the activity and its debriefing.

Simulations are often noisy, sometimes confusing, and require considerable flexibility in the situation. Yet, their potential for developing deepened understandings of key concepts and increased skill in decision-making, communication, negotiation, and conflict management remains high, making them an important learning tool.

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Overview of the Activity

Description

Each group of five participants will receive pieces of "Broken Squares." **Together, these pieces will form five complete squares of equal size. However, the pieces allotted to each individual will be insufficient to form one of the desired squares**. The group task is to find the right combination of pieces to form five equal-sized squares. Each member of the group must have before him/her one complete square equal to the squares before the other group members. There are only three rules which group members must obey in accomplishing their joint task:

- No member may speak.
- No member may **take** a piece from another group member, nor in any way signal that he/she wants a piece.
- Members may give pieces to on another. In this way, sharing and cooperation are necessary if the group task is to be completed!

Objectives

Participants will:

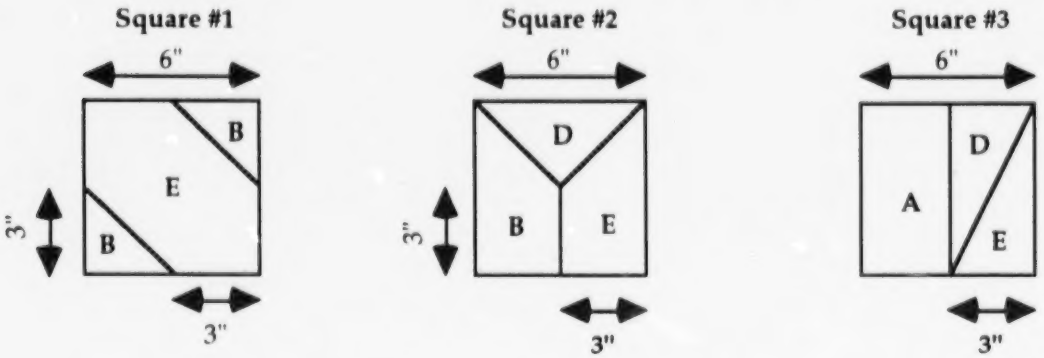
- explore methods of "problem-solving" involving cooperation and/or competition
- experience the need for cooperation in accomplishing a mutual goal
- investigate characteristics of a "society" and how members of a society work together, using knowledge of their own society as a basis
- analyze the concepts of cooperation and competition, and the potential role each may play in a society and between societies

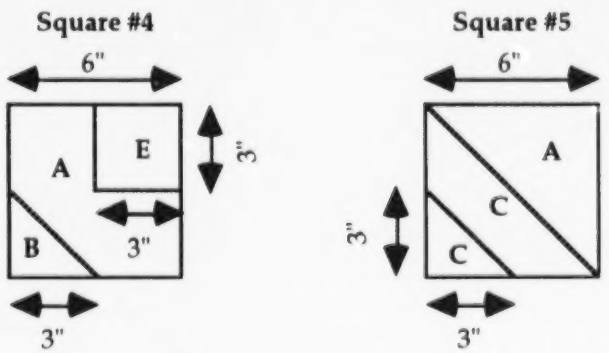
Preparation

Make 1 set of BROKEN SQUARES for each group of five participants in the class. (If your class is not divisible by five, remaining participants may serve as "observers.") You will need heavy colored construction paper, five envelopes per set, a ruler, a pair of scissors, and a marker. We recommend you laminate the squares for more durable use. Instructions for the BROKEN SQUARES follow:

1. Cut a set of **five** 6" x 6" squares of the **same** color. (Additional sets of squares my be cut from other colors, but all five squares **within** a set must be of the same color.)

2. Further divide the squares according to the following diagrams.





3. Label the pieces with the letters indicated above, and label five envelopes A, B, C, D, and E, respectively. Put all pieces labeled A in the envelope marked A; B pieces in envelope B, etc.

4. Make a copy of the Participant Handout found at the end of this unit which states the objective of the activity and the rules for each group of five participants.

Time The time requirement for the simulation itself varies, however, as with any simulation, ample time for debriefing is crucial. We recommend approximately a 45-minute session for the simulation and debriefing session. More discussion time may be allocated if you wish to address additional specific connections and topics to the experience.

RUNNING THE SIMULATION

Procedure

1. Divide the class into groups of five, and seat each group at a table, or arrange five desks in a tight circle (so that group members may easily see on another's progress). In classes not divisible by five, allow remaining participants to act as "observers" and record the activities of a group of their choice and monitor the behavior of the players.

2. Explain the objective of the simulation and spell out the rules, stressing that the goal is not achieved until each group member has before him or her a perfect square and all five squares are equal size You may wish to tell participants that the purpose of the exercise is to discover best means for solving problems, or you may simply have participants play the simulation and determine the "purpose" afterward. Stress to participants that there is no "winning" or "losing." Participants are simply to "solve" the problem confronting them--to form five equal squares from the "broken squares." (See alternative format for another technique.)

NOTE: Since the shapes use multiples of three inches, several combinations will form one or two squares, but only one combination will provide a solution which forms all five squares.

FOR YOUNGER CHILDREN, the following introduction may be more effective:

a. Ask the class what "cooperation" means. List the requirements for cooperation on the board. (Keep the list for reference in the follow-up discussion.) Participants may list such requirements as: Everyone has to understand the problem; everyone needs to believe that s/he can help; instructions need to be clear; everyone must think about the other people, as well as himself or herself, etc.

b. Describe the task before them as a puzzle which can be solved only with cooperation among their group.

c. Instruct participants to raise their hand during the simulation if they have a question concerning the procedure.

3. Pass out the envelopes. One set of envelopes marked A, B, C, D, and E should go to each group, and each participant in a group should receive one of the five envelopes. Instruct participants NOT TO OPEN THE ENVELOPES UNTIL THE SIGNAL TO BEGIN IS GIVEN. Pass out a copy of the Participant Handout to each group and remind participants to refer to this sheet if they have questions during the simulation.

4. Give the signal to begin.

5. When the facilitator or participants serving as "observers" view behavior which is contrary to the rules, they may choose to let the groups handle it, or may intervene by reminding participants: "Members may only GIVE pieces to other!" or "Remember, no talking or signaling allowed!" Etc., Etc. Such behavior will be investigated during the debriefing session.

6. When all or most groups have finished, or when participants seem to grasp the role of cooperation (vs. competition) in accomplishing a mutually identified goal, call time and bring the class together for a discussion of the issues. (Note that some participants will perceive this exercise as a "group task" while others will interpret it as five individual tasks, with each member solely responsible for making one square. The differences between groups should be addressed in the discussion.)

Alternative Suggestion

You may wish to encourage the element of competition between groups to a varying degree. One way to do this is to have participants in groups completing the task go observe another group which is not yet finished. A simple statement to this effect: "When **your** group is finished, silently get up and go observe another group that has not yet finished," will undoubtedly infuse inter-group rivalry. A more direct method for promoting the competitive spirit is to emphasize the notion "whichever group finishes first will be the **winner**!" If this competitive form of play is chosen, the facilitator or participant observers must periodically comment on which group is ahead.

The potential results of this technique are ambiguous. **Inter**-group competition may spark immediate **intra**-group cooperation — the ultimate object of the simulation. Alternately, this competitive technique may produce additional tension and anxiety, resulting in less efficiency among players, and ultimately serving as a source of antagonism to the desired cooperative spirit. So, introducing competition may foster cooperation by making the need for good relations **within** a group more obvious, or it may further deter cooperation by challenging each individual's ability to produce.

DEBRIEFING THE SIMULATION

As with all debriefing sessions following simulations, participants must be given an opportunity to describe what happened and share their feelings about the activity immediately. Begin by asking each group to briefly describe what happened in their group. If some participants helped to monitor the activity, ask them to share their observations. Ask participants the following questions:

1. Describe what happened in your group. Did you experience problems in completing the task assigned to you? If so, how did you solve these problems? How did you feel about the activity?

2. How did you feel when someone else held a piece you or some other member of your group needed and did not see the solution as you saw it?

3. Did anyone in your group finish his/her square and then sit back without caring whether their solution prevented others in the group from solving the problem? How did this make you feel? What did you do about this?

4. Did anyone finish his/her square and then realize that you would have to break it up and give away a piece in order to enable another person in the group to form a square? How did you come to this realization? How did this make you feel? How and why did you finally make the decision to break up your square?

5. Did you observe people in your group breaking the rules in an effort to "direct" the group solution? Did people **take** pieces from you to keep for themselves or to redistribute to others? How did you and others in your group react to such actions if they occurred? Why do you suppose the person(s) involved acted against the rules?

6. Did you feel competitive towards others in your group? Did you feel that your group was in competition with other groups? (Participant responses to these questions will vary greatly depending on the playing format the facilitator has chosen.) Did you feel compelled to finish your square before others in your group or in other groups?

7. What were your feelings towards members in your group? Did you develop a feeling of unity? If so, why? If no sense of competition was felt, what motivated you to cooperate?

8. Did you learn anything about yourself from this simulation? What sorts of things did you learn? (The facilitator may also want to relate the exercise to participants' general attitudes and relationships to each other and to the facilitator.)

debriefing the simulation

For Younger Participants

Review the requirements for "cooperation" that were generated before the simulation. Have participants evaluate how ideals work in reality by asking the following questions:

- Does cooperation seem more real now?
- What were the effects when others in your group cooperated?
- What happened when group members did not cooperate?
- Are there any other requirements for cooperation to add to the list now that you have completed the simulation?

Once participants have had sufficient time to describe what happened and air their feelings about the activity, have participants begin to relate the simulation to larger issues of social organization and the role "cooperation" plays in such organization. Ask participants to consider the foundations of "society" as a concept, using their knowledge of their own society as a basis for discussion. Begin the discussion with the following questions:

1. What is a "society"? How does the concept of "cooperation" fit into the notion of a "society"? (Participants should emphasize various aspects of a "society," such as commonality of economic, political, and/or cultural system; mutually identified goals, etc. From their experiences in the simulation, participants should be able to ascertain that any society requires or assumes a certain amount of cooperation.

2. Can you think of particular time in history when it was especially essential for families and groups to cooperate in joint tasks? (Participants may list such example as the early colonists, the wagon trains, "quilting bees," "barn raisings" etc.) What prompted such cooperation?

3. In what ways do you see people in our society cooperating today? (e.g., neighborhood organizations, recycling programs, charity drives, political campaigns, etc.)

4. In our society elements of both cooperation and competition exist; what are the situations in which one predominates over the other? Why? In your opinion, is there a relationship between the notion of competition and the importance placed on individualism in our society?

5. In what instances do government officials and/or other leaders in our society try to persuade people to cooperate? In your opinion, are our efforts at cooperation effective? Why or why not? (Participants may choose to discuss various topics relating to cooperation, such as current attempts at energy conservation, pollution control, crime prevention, etc.)

When participants have explored the role of cooperation versus competition among individuals within a society, encourage participants to discuss the role of cooperation and competition among various societies and nations. Have participants explore the dimensions of

cooperation and competition in a global context from both a historical and a contemporary perspective.

1. Historically, what role has competition played in the international arena?

2. Historically, what role has international cooperation played on a global scale? (Participants may mention the issue of "foreign aid" as an example of "cooperation," as well as such international organizations such as the United Nations, the World Health Organization, and UNICEF. Also, treaty alliances and various nongovernmental organizations with an international focus might be mentioned by participants as examples of "cooperation" on an international scale.)

3. In what forms does international competition continue to exist? Based on your experiences in the simulation, what might some of the causes for such competition be? What suggestions can you offer for resolving competitive forces which may be a potential source of international conflict?

4. What are some of the mechanisms for international cooperation in the contemporary world? Do contemporary circumstances warrant new forms of international cooperation which were not necessary or possible in the past? (Participants may bring up such matters as advanced information and communications technology leading to increased contact among societies or global environmental concerns such as desertification or climate change.)

5. Thinking back to the suggestions made for increasing alliances from the family/clan to the nation, how can we go about enhancing individuals' sensitivity to their role within the international as well as their national community?

For Younger Participants

1. Have participants review their list of prerequisites for "cooperation." Then ask about the concept of competition: What do we mean by competition?

2. How did nations compete a long time ago? What caused nations to cooperate in the past?

3. In the world today, do nations continue to compete? In what ways and why? How do nations cooperate today? Why is international cooperation so important now?

4. Can you think of ways to help people realize that international cooperation is important? Pretend each group in the simulation was a "nation." How could you help the different groups realize that international cooperation is important? Pretend each group in the simulation was a "nation." How could you help the different groups realize that cooperation among them is important?

BROKEN SQUARES

Objective: To form five squares of equal size, one in front of each member of the group.

Rules:

- No member of the group may speak
- No member may **take** a piece from another group member, nor in any way signal that he/she wants a piece
- Members may give pieces to one another. In this way, sharing and cooperation are necessary if the group task is to be completed!

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